**EPISODE 198**

[EPISODE]

**[0:00:07] IP:** Hello and welcome to Episode 198 of AvTalk. I am Ian Petchenik, here, as always with –

**[0:00:16] JR:** Jason Rabinowitz. How's it going, Ian? Are you happy to have not been flying anywhere today?

**[0:00:22] IP:** Oh, it has been a day. I could not be more happy to not be flying anywhere today, myself. Unfortunately, for thousands of other folks who are flying, it has been an even longer day than it has been for either of us. We're recording on the 11th of January here. As it turns out, news broke before we hit the record button.

**[0:00:46] JR:** Yeah, we had several people reply to us. They were saying, "Do you already record? Are you responsible for this?" Shockingly, no.

**[0:00:54] IP:** Not this time around.

**[0:00:55] JR:** We get to talk about the thing that happened earlier today. Not something that happened last week, exactly a week earlier. This is good news for us. Bad news for literally, everybody else.

**[0:01:05] IP:** Right, right. Here's what happened. According to a notice posted in the advisory section of the FAA's National Airspace website at 20:48 UTC on the 10th of January, so sometime Tuesday afternoon, Eastern local time, the system that manages the notice to air missions system went down. The NOTAM system went down. Wasn't a huge issue at that point. There was a notice posted. Flights kept going. There was nothing really happening, until this morning, when the system that had been backing up that system, they decided that they needed to restart the main system to clear whatever needs to be cleared. As a precaution, because there were some issues with the system coming back online, the first ground stop for any flights issued was at 5:27 Eastern on Wednesday, the morning of the 11th.

 

That was a United Airlines specific grand stop, so the airline said, “Okay, we don't want any of our flights taking off. Let's put the ground stop in place.” Ground stop, for those that don't know, listening to the show and catching up on all of the aviation terminology, there's going to be a lot of it today, ground stop means that if the aircraft is not yet in the air, it cannot depart for its destination. Aircraft already in the air can continue, generally continue to their destinations, but aircraft not yet in the air cannot.

At 5:27 a.m. this morning, Eastern Standard Time, United went into a ground stop, then successively other carriers joined, until there was a nationwide ground stop issued by the FAA. At 7:21 a.m. Eastern, they said that they're doing that because the system is in the process of coming back online, but not fully functional. They were going to wait until the system was functional and everything was working well.

They expected by 9:30 in the initial notice that that would be resolved at 9:04 a.m. Eastern Standard Time. The ground stop was lifted. But because of the volume of ground traffic that created, there was additional ground stops for airline, or airport specific places –

**[0:03:26] JR:** Where the damage have already been done.

**[0:03:28] IP:** Yeah. Basically, your major hubs were United, American and delta are having to deal with too many planes on the ground at any one time. They don't want any more planes clogging up the works. Things running late today, but cancellations not too bad. About 1,800 total cancellations. Looking at delays in the US, about 9,000. When it shakes out at the end of the day, it'll probably end up being closer to 10,000. That delays, much better than total cancellations. Total cancellations, very low as a total proportion of the total number of flights operated. About 50,000 flights operating in the US each day, and not nearly as many canceled last week, as they were last week. That's the good news. The bad news is we don't know what happened yet.

**[0:04:18] JR:** Somebody must know, or I'm sure by the time this podcast comes out in a couple of days, there'll be a better idea of what happened. For something as critical as the NOTAM system to go down, I don't really recall this happening anytime in the recent past. It's a pretty

Michigan critical thing. We actually have a prior episode of this podcast. I think it's somewhere in the 60s. Episode 65 –

**[0:04:40] IP:** Episode 65. Yes.

**[0:04:40] JR:** - where we discussed the NOTAMs, what they are, what they contain, why they're problematic and why they're so important. Basically, if you've ever been at the gates right before a flight boards, you might see a dot matrix printer spewing out what would appear to be hundreds and hundreds of pages of junk stuff. That's all the NOTAMs. That's information about runway closures and a crane operating 3 nautical miles in the vicinity of runway 3-1 left at JFK. Nobody cares about that, but it has to be in there anyway. No one can possibly read this whole thing. But there is some very vital information in there about runway closures, or taxiway closures, or things flight crews need to know about. Without that system, it is not safe for them to operate, according to the FAA, when they issued that ground stop.

I'm sure the airlines would agree with that. What was interesting was that at some point, the NOTAM portal is not the only place where you can pull out NOTAMs from. You can also get it from the DOD and other places. At some point, the information coming from the DOD NOTAM page might be unreliable. There's some question there and exactly what that means was the data just out of date, because the FAA system was down. Does it mean something else? I don't know. I would love to have the answer to that question.

Someone did point out to me on Twitter that this seems like, and probably is the largest ground stop issued by the FAA since 9/11. I can't possibly think of any other event where there was a nationwide ground stop for several hours.

**[0:06:11] IP:** Yeah. I can't think of anything that was this widespread and this long. I mean, thankfully, it only lasted a few hours.

**[0:06:19] JR:** There have been some issues, I think, a couple of years ago on the West Coast when ERAM went down, which is a part of the flight tracking system that the FAA uses. That went down on the West Coast, and there was a West Coast ground stop for a while, but nothing nationwide. I don't know if that's happened.

**[0:06:35] IP:** Yeah. I mean, in the intervening years, we've seen entire area control centers lose the ability to operate flights. The issue that happened at the Chicago control center a few years ago with a sabotage and resulting fire. Then there was the, I think, it was the Washington Center a few years ago, and that went ATC zero and everyone had to fly around that airspace for a while. Those were impacting a large number of flights, but localized and certainly didn't require grounds stopping all flight activity. Yeah, definitely going to be something next week to talk about, when we hopefully learn by then a lot more about what happened.

**[0:07:16] JR:** I just want to know how a few United flights actually did sneak out in the 6:00 hour today. They were like, when I woke up, someone said, go look at United. Like, wow, there's nothing, except for long-haul flights coming into the US. Except for one 6 a.m., Newark to Denver flight managed to sneak out. I'd love to know how that one flight made it out. One of life's mysteries. We'll never know.

**[0:07:39] IP:** Yeah, we'll never know. Maybe they pulled all their paperwork and were just really on top of things. The other smaller and slightly less interesting, but curious part of the story is that Canada's NOTAM system also went down today.

**[0:07:54] JR:** You say less interesting, but I think that's even more interesting. Canada has said, it didn't actually impact flight operations. They did not have to issue a ground stop, or anything like that. The Nav Canada did confirm that whatever their issue was, was unrelated to the FAA's issue. That is highly –

**[0:08:13] IP:** They believe it to be.

**[0:08:15] JR:** They believe it to be unrelated. I just find that a highly suspicious that two countries, two completely independent organizations suffered extremely similar failures of systems that do not typically ever experience failures of this nature, on the same day, in the same half a day. I'm not going to make any wild accusations, but I'm sure you can all think of what I'm thinking about here. Very suspicious.

 

**[0:08:40] IP:** I think that they said so quickly, that they don't believe it's the same thing. Leads me to believe that whatever happened in Canada, they know exactly what happened. I don't want to say anything about what I think happened in Canada before they do. To be so confident that it's not related, I feel like, the Canadians know exactly what happened already. We don't know what happened in either case. If you're listening to this Friday, and you already know, take that with a grain of salt.

**[0:08:40] JR:** Go back in time and tell us now. We'd love to hear it.

**[0:09:12] IP:** Yes, that would be great. I will say that it was two things. One, it was very nice to have not recorded, and so we could talk about what had happened today. Also, I thought the FAA did a decent job as they usually do, providing as much information as they could, especially on a system where most people who are flying have no idea that that system exists.

**[0:09:37] JR:** Yeah. FAA did a great job of putting out constant high-quality updates. The DOD Secretary put out updates himself in video form, so that was good. Southwest put out more updates about the FAA's failure today than it did of its own failure the other day. I guess, maybe they learned their lesson. Communication is good. I don't know. But the FAA couldn't really have asked them to do anything more for the public in terms of keeping people up to date. That's not unusual for the FAA.

**[0:10:07] IP:** Right. Let's just hope they're as forthcoming with information about what happened to the NOTAM system as they find out and hopefully, we find out not long after. We'll leave that conversation there for now, and probably come back to it next week as we learn more. Stay tuned for that.

Jason, we have talked a lot about pilot shortages, be they real lack of hiring, lack of the ability to hire pilots, claims that there's a general pilot shortage and what the problems are. Then we've talked more recently about what regional carriers are doing and what mainline carriers are doing to attract pilots. One of the big, big things last year was the huge pay increases that regional carriers, specifically the wholly owned regional carriers for American Airlines, made to their pilots. This week, there was an interesting article. Our friend Ned Russell wrote, quoting a Raymond James analyst, about how that didn't quite work out the way they thought it would.

**[0:11:11] JR:** Yeah. Basically, what happened was American opened the money spigot for its wholly owned subsidiaries, Envoy, Piedmont and PSA, according to Ned's article, to nearly the level earned by its own pilots. The move doubled the cost of its regional operations, which have, of course, long been a lower cost option for mainland airlines to operate to smaller cities. The problem with that was that may not have been an intended consequence, but you think otherwise, perhaps, that American may not have anticipated basically, all of the other regional airlines matching that enhanced pay.

I think, the goal for them, what they were thinking was, "We're going to offer more pay. We're going to entice pilots to come over to Envoy, Piedmont and PSA. We're going to have a great supply of pilots for our regional airlines, while the others were suffering." They probably didn't, or may not have expected other airlines to match that pay. It's a zero-sum game now, according to the analyst that Ned is quoting here, where basically, they have just made operating the regional airlines much more expensive, to the point where there are consequences now, where airlines are having to pick and choose which airlines they suspend service to.

This past week, American announced it would suspend service to three smaller cities. One of them. It's actually not that small, but Columbus, Georgia, Del Rio, Texas, and Long Beach, California. Not exactly a small destination. American will be pulling out of those outright, citing the pilot shortage and weak demand at those airports. Delta and United have already exited those markets, which is also problematic. We're ending up in the situation where some cities that only had one airline operating one of the regional airlines, now have nothing, which is obviously, if you're in that city, not a great outcome. I'm leaning to the side of this analyst that this probably wasn't the intended outcome, because why would it be? But you disagree. I want to hear your take.

**[0:13:11] IP:** Well, it's not that I'm necessarily disagreeing with the result here, because I don't think you can argue with them. I guess, there's two things that I'm thinking here. One is, if I'm an airline and I'm going down this route, obviously, I've done some analysis that incorporates the fact that it would be possible for other airlines to do the exact same thing that I'm about to do. I can't imagine that American didn't say, "Okay, what happens if?" And then didn't game out what

happens if. All of the other regional airlines managed to raise their pilot pay, and become just as competitive on compensation, as they were about to do.

That I can't believe that they wouldn't do that. If they didn't do that, that's a whole another story. The other thing about this is it kicks off something that has to happen anyway, if they're going to solve that you can't get mad at airlines for saying, we have a pilot shortage. Then everyone goes, “Well, maybe you should pay them better.” Then when they do pay them better, you get mad at them for realizing those economics as they come at them. I think, there's a thing here where the analysts seem to be like, “Well, you're paying your pilots more. That's dumb.”

**[0:14:24] JR:** That's dumb in the short-term.

**[0:14:25] IP:** Right. That's fine. If you're a financial analyst, your goal is to get to the next quarter. We've talked multiple times about the reasons that I don't like that. I think that that's short sighted. I think in the long-term, paying pilots more, especially pilots at regional carriers is going to be beneficial in the long run. You also have to realize what's going to happen in the short-term. I think that this was baked in. They made the bet and it went wrong. I'm not sure that they made the bet and it went wrong. I think, this is just the logical conclusion, or logical next step in a long process.

**[0:15:06] JR:** See, that's why I wanted to bring up this topic. I wanted to have that conversation. Good job. At this point, then what's really the benefit of even having these regional carriers? Just the smaller aircraft? If it cost us much to operate these aircraft, I mean, you probably have one less flight attendant, maybe two fewer flight attendants than a much larger mainline aircraft. At this point, it seems like, there's no benefit in operating a CRJ-900, instead of let's say, a 737-700, or whatever, or an A220, or in Delta’s case, that 100-seat 717 is probably a great aircraft for them right now.

It just seems like, there's a missing chunk to the conclusion from this analyst here. There's just something missing. I think you raised the point exactly, that they're probably only looking from short-term gain over a long-term sustainability.

**[0:15:58] IP:** Yeah. I think it's going to take a long time. I mean, for a long time, the system has been very broken. I think, it's going to take a long time to try and fix that broken system.

**[0:16:08] JR:** Of course, that being Ned, he brings up that maybe buses are the answers. We haven't seen much expansion in that, since the burst of American and United introducing a landline bus service last year. Delta hasn't dipped its toes into that at all yet. I would expect to see more of that tertiary city 60, 100 miles outside of the hub being operated by a bus, instead of a very expensive regional jet.

Also, he mentioned subsidies that maybe instead of essential air service, just at the federal level, maybe there needs to be some enhanced level of subsidies coming from cities and towns, rather than just federal and at the state level.

**[0:16:51] IP:** I might get yelled at for saying this. But it might also behoove airlines to consider propeller-driven aircraft.

**[0:17:00] JR:** Not in this country, sir. Uh-uh.

**[0:17:04] IP:** They seem to work in every other country in the world.

**[0:17:06] JR:** You say that, but I guess we can just add this in, literally one of the only propeller operators in this country, Horizon, one of Alaska's brand, original brand is flying a bunch of them to Victorville today. I think, they only have three left, the Dash 8Q 400s in their fleet, and they'll be gone in a couple of weeks. The propeller aircraft are not doing well in this country.

**[0:17:31] IP:** No, not in this country. But they seem to work everywhere else. Take that with whenever you will.

**[0:17:37] JR:** The eVTOLs are propeller.

**[0:17:39] IP:** Get out. Get out. Moving on. Moving on.

**[0:17:41] JR:** All right. I crossed the line.

 

**[0:17:42] IP:** You crossed the line. You went too far, sir.

**[0:17:45] JR:** I went too far.

**[0:17:46] IP:** It's beginning of the year, which means we get to talk about the end of last year. By the end of last year, I mean, Boeing and Airbus 2022 deliveries. The numbers are in. As we've come to expect over the past few years, at least Airbus delivered more aircraft than Boeing did, but the numbers were much, much closer this year. A total of 661 Airbus aircraft going home to customers, versus a total of 480 going home to Boeing's customers.

**[0:18:19] JR:** Yeah, pretty incredible that it wasn't a particularly good year for either of these, but Airbus still managed to crank out 246 A320neos, 264 A321neos. That's pretty impressive. Boeing on its own, even though we started the year with the MAX not doing so hot at all, they managed to also deliver 374 MAXs, which is again, pretty outstanding for all things considered. Not great overall, but it's going to take a couple of years for supply chains to get back to normal. I don't know if they'll ever get back to normal, but get back to some sense of normal before they can really start pushing the envelope of what's possible with these production lines.

**[0:19:04] IP:** Yeah, yeah. Exactly. I mean, Airbus was targeting over 700 aircraft to go home this year. They fell short. Things as they have very openly said, we weren't able to put enough aircraft together to deliver them. That's a big part of the puzzle for both Airbus and Boeing for all manufacturers, really. Top line numbers, Airbus 60 A350s, 32 A330s. That includes the military variants that move over to Airbus defense and space before they're delivered to military and government customers. Pulling out some interesting things. Three A330-800neos. That's important to call out. 516 A320 families, all neos, including six A319neos.

**[0:19:50] JR:** Six. Those include ACJs, I think, too, right?

**[0:19:55] IP:** Yes. The deliveries to China Southern and ACJs.

**[0:19:59] JR:** Southern, I think, took a pair, or maybe three of the 319neos. Not a popular aircraft.

**[0:20:04] IP:** No, it is not. Then 53 A220s with a very, very lopsided, but not unexpected split. Six A220. 147 A220-300s. Then Boeing's total – I mean, just like Airbus, huge tilt towards narrowbodies. 374 MAX, as Jason mentioned. A dozen of Poseidon aircraft, which are based on the 737-800 frame. Five 747-8Fs, including all but one from the final run of the 747 production line. 15 767-2Cs, which are the KC46 tankers. 18 767-300 freighters. Just three 777-300ERs as we try and bridge the gap to the 777X. But 21 777 pure freighters. Then 31 787s, with the Dash 8 bringing up the rear, deservedly so, because it is the worst of the 787s.

**[0:21:11] JR:** Wow. Just calling it as you see it.

**[0:21:13] IP:** I've said that multiple times on this podcast. The only people who should be surprised are the people tuning in for the absolute first time in this episode. I have been very clear –

**[0:21:21] JR:** Or people buying them. I don’t know.

**[0:21:22] IP:** I've been very clear on my position about the 787-8.

**[0:21:26] JR:** All right. Well, I will say, looking at Boeing's numbers, we can clearly see where the trend is heading in the future. It's going to be weird in the not-too-distant future to look at Boeing delivery as commercially and see either airlines took the one aircraft, or they took the other. It's either going to be a 737 MAX, or a 787 of some variety. The 777X is not selling aircraft. The 76 is not in production for passenger airlines anymore. The 747 is gone. 757 is gone. Really, they're down to the 73 and the 78. It's just so weird to see that huge gap and size between those two aircraft, without really anything in between them.

**[0:22:06] IP:** You want small or large.

**[0:22:08] JR:** We got them both, but that's –

**[0:22:11] IP:** Those are the aircraft that went home for the year. As I mentioned, not a stellar year, but healthy numbers. Looking forward to next year to see how many –

**[0:22:19] JR:** Trending upward.

**[0:22:20] IP:** Trending upward and seeing how many aircraft go home. Let's take a quick break. Then when we come back, we are going to have a fascinating conversation with Casey Humphries, who is with the United Network for Organ Sharing, and Chris Curran who is at New England Donor Services, about the logistics and transportation of organ donation. This is going to be a great conversation. Stick around after the break. We'll be right back.

[BREAK]

**[0:22:53] IP:** Welcome back, everyone. We have a very special conversation today. A conversation with Casey Humphries, who is the Logistical Products Service Line Leader and she will explain what exactly that is in just a moment. And Chris Curran who is the SVP of organ utilization for New England Donor Services. We are here today to talk about organ transplant logistics, something that before this week, Jason and I had never really even thought about covering on the podcast, because we didn't really know anyone that was doing that. Now, we have two people who do that for a living. Chris and Casey, thank you so much for joining us to talk about this today.

**[0:23:31] CC:** Thanks for having us.

**[0:23:33] CH:** Yeah, absolutely. Thank you.

**[0:23:34] JR:** Welcome. For some context, this topic was brought to our attention by an external PR firm, who actually framed it in the way that brutal winter storms and other emergencies recently have been causing havoc in the commercial flight network, primarily Southwest, the biggest airline operator domestically in the US. Organ transplants have to continue, obviously. This is literally a life or death situation. They're not going to let a few 1,000 canceled fights every day get in the way of saving patients. This is a really good opportunity to bring some light to a topic that most people probably don't ever want to have to think about.

**[0:24:10] IP:** Yeah. It's definitely something that I haven't given a lot of thought and I'm really glad to learn a lot more about it. I hope our listeners really enjoyed this conversation. Casey, Chris, can you walk us through the process of how logistics become involved, once an organ donor has been identified and a recipient has been identified, how does an organ get from point A to point B?

**[0:24:31] CC:** Right. I think, the answer to that greatly depends on where is the organ starting from and where is it going and what type of organ it is? Organs are allocated, obviously, to patients based on how sick they and a combination of other factors that determine how sick they are and how soon they need a transplant. That allocation to those patients also happens within a geographic circle surrounding where the donor organ recovery is taking place.

For example, if we have a donor in Boston, kidneys are allocated to a patient's perfect matches. Then beyond that to patients in order of a list that are within a 150 nautical miles. A lot of that takes place by air and by ground, or a combination thereof. Most kidneys, if they're going to travel a distance that needs flight, they're going commercial. They're going in cargo. And often hand carried by a courier, intended with cargo on that airline, and then picked up by a courier on the other end. Whereas, abdominal, the liver and thoracic organs are primarily transported if they do need to fly by a charter flight.

I mean, that's generally how it happens. Once we've identified candidates, we will start to look at what logistical arrangements need to be made to get the organs there and a shorter time period as possible after they've been recovered.

**[0:26:01] IP:** You mentioned the liver and thoracic organs need a charter flight. Is that because of the time they can spend outside of the body, being different than kidneys?

**[0:26:09] CC:** Yeah, that's exactly right. Speaking just in generalities, yeah, the kidneys if they're young, otherwise healthy kidneys, they can last a long time, following the organ recovery. Whereas, kidneys from older donors to transplant programs, like to put them into their recipient’s a little bit faster, and keep that cold ischemic time low. For liver and thoracic organs, often it's the team that accepts the organ, the transplant program that accepts the organ is actually often doing the organ recovery, sending a surgeon to the operating room to do the

recovery of the organs. Therefore, they are turning around and getting right back on a charter plane and flying back to home base to do the transplant.

**[0:26:51] JR:** That's interesting. It's actually a round trip thing, where I always imagined that the local hospital would do the surgery to remove the organs and then box it up and then ship it out. You're saying that they actually, the receiving hospital organization actually dispatches their surgeons out first to recover the organ and then they take it back with them. Is that how that works, usually?

**[0:27:11] CC:** Yeah. For most thoracic organs, that's definitely the case. If the heart was allocated to a patient in Chicago from a donor in Boston, then chances are that transplant program that accepted that heart in Chicago would send a surgeon to Boston to evaluate the organ, make sure it's functioning well in the donor, and then recover it and fly back to Chicago for the transplant. Yeah.

**[0:27:35] IP:** You said, a courier carries it, then it travels via cargo with the airline. Then a courier receives the organ on the backend. How does that work? Is there somebody at United, American, Southwest that they're the point person that you call them up and say, we have a kidney today? Or we have a liver today?

**[0:27:55] CC:** Yeah. I mean, again, it depends. Most kidneys don't get on a commercial flight. I mean, that's really just when they need to get the distance. We work with specialized courier companies, or organ procurement organizations work with a lot of specialized courier companies that have those direct relationships with airlines. The couriers themselves go through a TSA process, a vetting process. They will work it out with the airlines to find the best flights and the best connections and sometimes avoid connections that seem like they could be challenging to make the connecting flight. I think, a lot of the carriers out there that we work with, they're not just local carriers. They're really national carriers that specialize in this type of work.

**[0:28:38] IP:** Casey, I want to bring you in by asking you the question that I promised we would get an answer to at the beginning, logistical products service line leader. That is a fantastic title,

because I feel like, it means that you have your fingers working in all different directions and you're doing everything.

**[0:28:56] CH:** Yes, kind of. From our perspective, so I'm at the United Network for Organ Sharing, so we are the nonprofit organization that's responsible for running the transplant system, running the match algorithm, the IT systems, developing the policies, etc., with a network of volunteers, professional and patient volunteers. Chris has been one of them. We're responsible for doing that on behalf of the federal government through a contract.

For a long time, logistics, and I mean, still today, logistics is done by those local partners, those organ procurement organizations. Chris and his team in Boston and the surrounding areas. There's 56 organ procurement organizations across the country, who are really in the weeds of and planning these trips and making sure that organs are making it from A to B safely and efficiently. They've been doing that locally. We as a system, I'm saying that broadly, our IT system, we haven't had our hands in that process.

However, what we have encountered over the years, particularly since 9/11. Prior to 9/11 organs were allowed in the cockpit, or near the cockpit on the plane. They were above wing. You really had somebody who had eyes on it and had hands on it pretty much the entire journey. Also, back then, we were moving less than 18,000 organs a year total. It's the number of transplants in 2001.

However, fast forward now to last year, 2022, we had for just deceased donor transplants, we had more than 36,000 of them. The volumes have just changed astronomically. About half of those transplants were kidneys, so a little bit overpass. About 20,020 in 2022 were kidneys. Different areas of the country fly different percent of those kidneys, depending on their local infrastructure. If there are fewer transplant programs in the area, they may move their organs further, they may need to fly more regularly.

Since 9/11, back to that point, organs were re allocated to the cargo hold. We had to go through the cargo process. We're beholden to cargo hours, to cargo processing, cargo lockout times. In a realm where minutes matter, we need to know exactly where that organ is going and be able to get it to the airport between 60 and a 120 minutes before the flight takes off because of those

cargo lockouts. We don't always know in that timeframe where it's going. The organs have a certain amount of time they can be outside of the body. We're eating into that time by having to be part of that process. There's a whole host of things that you have cargo hours flying to a place in the middle of the night where the cargo office isn't open. There's a patient on the other side that needs that transplant, and they need that transplant now, but no one can get the organ because it's in the cargo office.

**[0:31:53] JR:** That is seriously interesting. I don't think many people listening to this podcast would have assumed that. Now, I hope is the part where you transition into saying, well, the federal government is looking at this again, and there's legislation pending to undo this mistake that made since 9/11. I'm hoping that's where you go to now. If not, how do we do that?

**[0:32:15] JR:** Sure. Well, so that was my introduction to my job, which is, we are now focusing our perspective, as that nonprofit, as partners and contractors with the federal government and partners with the entire transplant community. We know that we need to be at that table. We know we need to put our weight behind some of these conversations to make things change for the entire system, for the benefit of every patient that's waiting for an organ. We recently sent a letter to the secretary of the DOT, asking for a meeting to talk about some of these commercial challenges. That letter came out before everything happened with Southwest here recently. Southwest closed their cargo offices entirely. You think about how we move organs, and then you think about the potential impact if a carrier like Southwest closes their cargo process.

Now, we have very creative people in the field, and they will move heaven and earth to get a transplant to the patient who needs it. They have and I've spoken to a couple of IPOs, who work primarily with Southwest and they've said, “We're doing our best, and nothing's gone awry, because we are burning the midnight oil, we're driving things. We're going above and beyond to ensure that patients receive these transplants.”

We honor this precious gift that people gave us. My role is to help coordinate some of these efforts. We have a tracking system that we've created. I'm in charge of that. We have some tools that we're developing to help coordinate what flights are available and take into account those lockout times as cargo hours to say, don't even look at these flights, because they're not possible. Here are other flights that you could do. You have more information, when you're

placing an offer with a transplant center. What is the scope of the flights that are available? When could you get it there reasonably? Be able to provide more of that information, supporting the efforts to have this conversation with the secretary of the DOT. Of course, we're asking in that letter to have representatives from the FAA and from TSA and from others, because it's going to take a village to solve this kind of problem.

**[0:34:16] JR:** Going to take an act of Congress even.

**[0:34:19] CH:** Very well could take an act of Congress. There's been interest. I know, Chris has been involved in one of the committees that creates the policies that are then enacted. The OPO Committee, Organ Procurement Organization Committee, and they've been looking at what other policies can we put in place to ensure that organs are moved in the most efficient way possible? They've looked at different data. We ourselves have done some data collection projects to try and see what information we can gather, so then we can identify those pain points beyond the operational side of things.

To your point, I have my fingers in a variety of places and some product development, but also in some more of the operational and political spaces to try and see how else we can move the needle and what folks do we need at the table, to really make a difference and provide some relief to what is a real challenge and moving organs to the patients who need them.

**[0:35:12] IP:** Wow. I mean, I said at the beginning of this conversation that I didn't really have any idea what goes into this. But now, I'm just in awe that anything gets anywhere, given the changes that have happened over the past 20 some odd years, to how things are moved, I mean, a doubling of the number of transplants and a change and how things are transported, has this driven a charter market for organ transplants? Have you guys looked into that? Or is it just such a logistical challenge beyond what's already an immense challenge, that it's not something that happens on a regular basis?

**[0:35:51] CC:** Well, I can answer from some experiences. Most of the time, the vast majority of the time, it works out. It does work out that we can get a kidney to the commercial airline and attended on time and land on time and get to the patient that's awaiting this precious gift. I think,

for those times when it's not lining up, as Casey pointed out, we do get creative and we look for ways to get things there by other means.

We, a couple months ago, had a kidney that needed to get to Florida, and there was really no viable option, other than to use a charter airline, a charter flight. We did and we made it happen and the patient got the transplant. I think, each one of these things, well, the numbers are staggering and we're helping a lot of people through organ donation and transplantation. I think, we also need to focus on every single one of these as a vital opportunity and unique and make sure that every single one goes well, even if it's 40,000 times a year.

To Casey's point, yes, sometimes we got to get creative. I think, relying on new technologies and emerging technologies is also something that we need in the future. There are programs looking at could we use drones? One of Casey's products at UNOS is GPS trackers that go with the organ, so we know where the organs are at all time, so that we never miss an opportunity, or risk that we don't know where the organ is when it's being transported by air.

**[0:37:25] JR:** When you do utilize a charter service to get an organ from A to B, are there charter airlines, or charter companies that you typically look to first that specialize in this kind of transportation? Or is it very much, you'll take whatever is available at that given moment?

**[0:37:41] CC:** Yeah. It's a great question, and it depends is the answer. I started to sound like a lawyer, but it depends. If we're putting people on the plane on a charter, then we consider the safety standards of the operator. If it's going to be the organ traveling alone, then it does, of course, widen our pool. We will look at things, like Argus rating, or Wyvern rating and things like that. We work with a couple of operators in the Northeast here in Boston that do cater to our needs. They are giving us dedicated flight crews and dedicated planes, and having them on standby. We also operate our own CJ4 that we – based out of Bedford. There's a couple of OPOs in the country that operate their own aircraft as well, to make sure that there's always an option available to move an organ.

**[0:38:36] IP:** That's interesting. Are those aircraft on standby pretty much all the time with a certain window of notice? Or is that something where you have a little more lead time and say, we'll use our own aircraft?

**[0:38:48] CC:** I mean, I can only speak to our experience, so operating the CJ4.

**[0:38:52] IP:** Sure, sure.

**[0:38:54] CC:** We have seven pilots that are dedicated to this plane and these operations. We can call them with the two hours' notice and have them ready to go on a flight to go get an organ, or bring an organ someplace. Of course, if that plane is flying, or the crew is in rest after their duty day, then we rely on backup charter options from a few specific providers that really do cater to donation and transplantation, and are building their service models with that idea in mind.

**[0:39:25] JR:** Correct me if I'm wrong, but I had to look this up. CJ4 is a Cessna citation, actually. That's 10-seat passenger jet. Didn't know the short name for that aircraft. If anyone else didn't know, that's a citation.

**[0:39:36] CC:** Sorry. Yes. Cessna citation. Yes.

**[0:39:39] IP:** We're normally talking commercial flights, so anytime we veer off that course, Jason and I –

**[0:39:43] JR:** I had to look it up. I was stumped.

**[0:39:45] IP:** - faulter. Yeah. This question is certainly for the both of you. What happens when something goes wrong? What happens when a flight that supposed to be transporting an organ has a mechanical issue and can't depart? How does a negative situation get resolved, obviously, because you need to get yourself rather quickly?

**[0:40:04] CC:** Yeah. I mean, I think it depends on the scenario and the organ and the location. We're very fortunate that if we're near a major hub, that we can look for alternatives. We can preserve organs now. Preservation devices that can lengthen that time from organ recovery, to transplantation. That does give us some additional support. Although those pumps can't actually travel in commercial airlines. The pump we use is it's a kidney pump called The Life Port, Organ

Recovery Systems Life Port. They have four of those batteries in the back that the airlines don't want.

**[0:40:44] JR:** Lithium-ion batteries. Okay.

**[0:40:48] CC:** Of course, it's a scene that ideally, would be accompanied by a person. We do try to employ some of those technologies to, if a kidney can't get out on a flight until 6 a.m., that we place the organ on a device, preserve the organ overnight, and then package it the next morning, right before the plane, so it can get out on time. We try to look for additional options that can extend those times.

**[0:41:15] JR:** Casey, I think you mentioned that you obviously tried to avoid flight connections when transporting an organ. But sometimes, I'm assuming that there isn't an option that you have to go through a hub to get from A to C via B. If you do misconnect, or a connecting flight cancels, it's happened to all of us and the organ gets stuck in Chicago O'Hare, what options do you have at that point? Could you go to plan B and see if there's use for that organ locally, or do you send it back home? Where do you go from there?

**[0:41:44] CH:** Yes. That's exactly what is often done in that case, where there are no other options to get it to the program that had originally accepted that organ for their patient. There are ways that the organ procurement organization can look more locally for another recipient for that organ, and then do everything they can to then get there. That may require a different flight, but at least it's a flight to somewhere where you've already vetted that it can get there, because now, you know where you are, and the whole scenario has changed. Now, I can get a flight from here to there, and it can leave at this time. Will you accept this organ?

There are ways to make that work and make sure that that precious gift makes it to somebody who is still in need of that transplant. As I said before, the organ procurement teams will move heaven and earth to make sure that that gift is utilized.

**[0:42:40] JR:** It's just making me anxious, even just thinking about that. I mean, I know we've all misconnected flights by just a few minutes and I track, of course, using flight radar, I track my inbound aircraft to see if my inbound flight will be late. It makes me anxious, just thinking that a

missed flight connection can have such a huge impact on somebody's life like that, when I'm just upset if I miss my hourly shuttle flight to DC. This is just operating on a whole other level that I've never thought about before.

**[0:43:12] CH:** Yeah. There are other ways that the community and that the specialized couriers have come up with ways to help in the moment. Like I said, organs move in cargo. However, some of the courier services that are specialized for transplant, they have – where you can have an onboard courier. You pay for literally a staff member to make that organ, their carry on. They are holding that organ through the flight. Then you have a person there, which is different than when there's an organ by itself. Now you have a person to walk to the counter and go, “I need to get on that flight.” You have a person to help navigate, and in the airport when those kinds of things happen. There are backup systems and really cottage industries that have come up just to make sure that we're being good stewards of that gift.

**[0:44:00] CC:** Yeah. I think, this whole, thankfully, those circumstances where something doesn't get where it's supposed to go is rare. What it does, then you are walking a fine line of wanting that intended recipient to get their transplant and doing everything you can to get it there. Once you realize that maybe that's not going to happen, making sure that the organ is used for somebody else. That it still goes to a deserving patient that's available. One of the things that we've done in the past is if it – and thankfully it is rare. But when it does happen, call your friends at other organizations and say, “Hey, listen. It didn't make this flight. Can you place it on a device to preserve the organ, until I can get it where it needs to go, or I can get it to another patient?”

I think not just along the lines of transportation options or delays to look at what other things can be employed, to make sure that the organ itself still gets transplanted. Yeah, it does require some creativity. At the end of the day, we want the organ to go to the next patient on the list. Sometimes, you need to make sure that the organ is going to get used for deserving patients.

**[0:45:15] IP:** I want to go back just a moment to what Casey was talking about with the onboard courier. Because that's what I had in my head all along is, as somebody walking into an airport holding a cooler.

**[0:45:26] JR:** I mean, that's what you've always seen on TV and movies, right? It's just some guy with a cooler that says like, live organ, or something on it.

**[0:45:33] IP:** I guess, the question, so they're traveling in cargo most of the time, how does that distinction get made between, is it just a question of cost and hiring someone to go with the organ, so then it can become something that's carried in the cabin? Or is there more to it than that, that often prevents that from being the situation?

**[0:45:54] CC:** Well, I guess, again, we're talking specifically for kidneys. The kidneys can tolerate that time, as we talked about. They can go 24, 36 hours from being recovered to getting transplanted. You do have the benefit of time that you can utilize a commercial flight. I think, it used to be – I think, I don't know if you guys have ever gotten on a plane where you did see, and this is again, back in the day, there'd be corneas, or kidney in that front closet, up by the flight attendant to the front of the plane.

**[0:46:28] JR:** I can't say I've ever run into that myself.

**[0:46:32] CC:** I have a lot of flight attendant friends, and they used to – some of them used to hand carry corneas, or an organ once it was tendered with the airline. That did used to happen. I think, Casey brings up all the points of why it doesn't happen anymore. I think, it would be hard to utilize a hand carry every single time. We all know how booked planes are these days and how often they're overbooked. Then you run the risk that that person can't get on a plane. Quite honestly, the kidneys when they are packaged, don't need a person to carry them, as long as they're going to be dealt with care by the airlines themselves.

**[0:47:14] CH:** My understanding is most folks that are booking these onboard couriers hand carry that organ, or once where they maybe they're in an odd spot in the country and everything they take, they've got to take. They got to have a connection, right? That's the most concerning part. You don't have to worry about one fight. You have to worry about two. At least with one flight, once it's been loaded onto the plane, you feel confident it's going to arrive at the destination. It's those connecting flights that are the more challenging ones. Having that onboard courier is a bit of a peace of mind.

Like Chris said, you may not be able to get an onboard courier, because again, we don't know that that organ is going to be on that flight until the day of. There's a good chance that flight's already booked. That's where it's not a scalable option, but it does work in those –

**[0:48:06] CC:** Yeah. Tight spot.

**[0:48:07] CH:** Yeah. Those tight spots in those individual cases.

**[0:48:10] IP:** How do you get an organ through security, though? I mean, are there special dispensation? I mean, because I know if you freeze your water bottle, you can carry it through. If any little bit, a little bit if it's melted, they're going to make you dump the whole thing. How does the TSA react to, "Hi, I have a pair of kidneys, or a kidney in this cooler"?

**[0:48:28] CC:** It's interesting, because I've gone through security at general aviation with organs. They can put them through the X-ray machines if they need to.

**[0:48:39] IP:** Oh, yeah?

**[0:48:40] CC:** Yeah, so if they are in a cooler, you can put them through X-ray. There's no harm to the organ and we've done that before. I don't know what TSA's process is for cargo, but there's no harm in having it go through X-ray when it's in a box or a cooler. It's obviously a different matter when it's on a pump. I think, when we're traveling from point A to point B, I don't want to give this impression that we don't get great support from cargo, because the truth is that I've had cargo people bend over backwards to make sure that things get where they need to go, or are pulled off the plane early.

The first thing out of the cargo is we've had, oh, a tight connection and the cargo guy is going to go and get it off the plane and walk it right over to the other plane. I actually think that the cargo people have been vital in making sure this happens safely. We had an experience years ago where a cargo area closed and a guy from the cargo went back and got the kidney and gave it to the courier. At least, my own experiences, we've had really positive interactions with the cargo officials that have understood the importance and the benefit that this provides to people.

**[0:49:52] IP:** Yeah, exactly. I don't think we should give that impression, because from everything that I know about working with people within the airline industry is that they will bend over backwards when there's a good reason to do so. I can't really think of a better reason to do so. I know people that will make sure that somebody will get there for a tight connection, just when it's a normal family reunion. Having this particular reason, I can't imagine anyone would not do the best they can to make sure that everything goes well.

I want to thank you both so much for joining us and talking about this with us. I really appreciate your expertise and your time. We've been chatting with Casey Humphries, who is the Logistical Product Service Line Leader. The title doesn't do her justice for United Network for Organ Sharing. And Chris Curran who is the SVP of Organ Utilization for New England Donor Services. Thank you so much again, for joining us. This has been a fascinating conversation.

**[0:50:46] JR:** Yeah. Thank you, Chris and Casey.

**[0:50:48] CC:** Thank you, Ian. Thanks, Jason.

**[0:50:50] CH:** Yeah, thank you both. This has been great. Appreciate your time.

[BREAK]

**[0:50:59] IP:** Welcome back. I learned so much from that conversation.

**[0:51:03] JR:** That was definitely up there as one of the most interesting conversations we've had, I think.

**[0:51:09] IP:** I didn't know what to expect going in into that conversation. I'm glad, I didn't have a ton of expectations about where things were going to go, because I learned so much. It was just fascinating to think about working on something like that on a day in, day out, trying to make sure that all of those lifesaving things are – All of those puzzle pieces need to fit together every day, 30,000 times a year.

**[0:51:37] JR:** Yeah. Sounds like an extremely stressful job, but I'm happy we learned more about it. I am happy I didn't delete the PR pitch without opening it, as I usually do, so we were able to have that conversation. Everything about that was – Those are the greatest interviews, where we truly don't know a damn thing about the topic and we get to learn and you get to learn. We all get to learn. I have, I'm not going to say, a newfound respect for that particular industry, because who wouldn't respect it? But I have a newfound respect for –

**[0:52:08] IP:** A deeper.

**[0:52:08] JR:** - how freaking heart it is. A deeper understanding of how complicated it is and how few people run around with an organ in a cooler, yelling, get this somewhere, stat, in a helicopter. I'm disappointed about that.

**[0:52:21] IP:** That's very rare, I guess. Let that be our pitch to you. If you've got something that you A, want to talk about, that you think is interesting, that we should learn about, please email us at podcast@fr24.com. Or if you say, "Hey, I want to learn about this," go find somebody to talk about it, we'll do that too. Just email us, podcast@fr24.com, and you'll listen to it on a future show.

We've got some things to run through, before we get to the end of the show, some news and notes about where aircraft are going and where they have been. This time, maybe, possibly, could be. I don't want to jinx it. China Southern might operate the first Chinese carrier 737 MAX flight this weekend, or on Friday. It's on the app. It's in their schedule. They might fly it, but they might not. I don't want to get Charlie Brown with the football again, like we did in October, but it's entirely possible.

**[0:53:17] JR:** If it's going to happen, this is probably more real than the last time. Since then, COVID zero has ended and China is open and people can actually move about the country. They probably do need aircraft in their fleet that they didn't need the last time this came around. Fingers crossed. I believe, this one is much more likely than last time, because they need the damn aircraft.

**[0:53:39] IP:** Yup, that's a good point. They need the planes, so they might as well fly them. The last 747 produced has been painted and 863GT is now wearing a – I almost said special livery.

**[0:53:54] JR:** Standard livery. Boring livery. Not special livery.

**[0:53:58] IP:** It's non-standard.

**[0:53:59] JR:** It's not standard, not in the way it needs to be non-standard. What is it? An Atlas aircraft with some co-branding from someone else I don't care about.

**[0:54:09] IP:** Yeah. Apex Logistics. Yes.

**[0:54:11] JR:** Whomever the hell that is, doesn't matter. What's important is that there is nothing, no permanent paint on that aircraft to notate that it is the last ever 747. However, there have been somewhat reliable rumors that it will get a Joe Sutter decal of some sort, which I hear is going to be extraordinary. When I hear decal, I think it's not great, that's not permanent. It'll get scratched up, or dinged, or taken off. I've heard that it's so special that they actually made two of them and gave Atlas a second backup in case they need a spare in the future. There are some times that decals stay on aircraft forever.

I remember JetBlue had a Simpsons movie decal on one of its A320s and it stayed on that airplane for so long, until it just faded away from the sun that you couldn't see it anymore. It was small, but fingers crossed that Boeing pulls something out of a hat, because at this point, they've barely even acknowledged that this is happening so far.

**[0:55:13] IP:** I mean, we've been after Boeing about this advising us. They finally released a video early this week.

**[0:55:20] JR:** Recorded months.

**[0:55:22] IP:** Yeah, recorded when the aircraft was still in production, was still being assembled. Basically said, “We're coming to an end. Send us what you got about the 747.” How you feel about it. I think Jason and I are going to put something together for that.

**[0:55:36] JR:** But Ian, we have breaking news.

**[0:55:37] IP:** Oh, dear.

**[0:55:39] JR:** Out from the FAA. A statement. I will read it in whole. Sam Sweeney has tweeted it from ABC. Just read this whole statement. “The ground stop and FAA system failures this morning appear to have been the result of mistakes that occurred during a routine scheduled systems maintenance, according to a senior official briefed on the internal review.” Oh, so this isn't an FAA statement. I'm just reading Sam Sweeney's snippet of his article. He goes on to say, “An engineer replaced one file with another, the official said, not realizing the mistake was being made Tuesday. As the systems began showing problems and ultimately failed, FAA staff feverishly tried to figure out what had gone wrong. The engineer who made the error did not realized what had happened.”

They go on to say, “It was an honest mistake that cost the country millions. The official said the unnamed official. Congressional hearings are expected, blah, blah, blah, blah, blah.” Not terribly unsurprising that someone may have fat finger to file, or someone uploaded something in an XLS, instead of CSV file, or something stupid like that. There we go. We're starting to get more and more information on whatever it is happened this morning. Doesn't explain what happened with Canada and how that happened simultaneously on the same day, but more information is already getting out. The FAA itself has not confirmed this information.

**[0:56:58] IP:** Well, it didn't happen on the same day. It happened on the day after the initial problem. My question is, how long does it take to drive from the FAA headquarters up to NAV Canada's headquarters, and is that contractor employed by the same people?

**[0:57:11] JR:** Yeah. You think it's the same guy that's going around, uploading the same corrupted file?

**[0:57:16] IP:** Again, it's just like – he's the IT guy driving around doing the updates.

**[0:57:21] JR:** And contractors, you can't trust them.

**[0:57:23] IP:** Oh, boy. I mean, I can't say I'm surprised.

**[0:57:27] JR:** I'll skip this paragraph. But it goes on to say, "Had the FAA's new NOTAM system in place, redundancies would have likely stopped the cascading failures. With the antiquated systems in place, there's nothing to stop blah, blah, blah, blah, blah." We looked into this a little bit. Apparently, you looked into it this morning, that there has been an effort to replace the NOTAM system for a decade, and I don't think there's anything to show for it just yet.

**[0:57:49] IP:** Not nearly enough to show for it, which I certainly hope that becomes a part of the push to keep things moving.

**[0:57:58] JR:** Go back and listen to episode 65.

**[0:57:59] IP:** Yes, please. Please do. We'll put a link in the show notes. Okay, where were we? We got interrupted by breaking news. Wow, that's amazing.

**[0:58:07] JR:** That never happens. It's supposed to happen in three minutes from now when we're –

**[0:58:10] IP:** Exactly.

**[0:58:10] JR:** Next up. We already mentioned this a little bit earlier, Alaska is taking a couple steps closer to once again, becoming an all-Boeing – proudly all-Boeing.

**[0:58:20] IP:** Proud to be all-Boeing. Yeah.

**[0:58:21] JR:** You have to be proud about that. Today, or this week rather, saw the shuttling of its entire remaining A320 fleet out to Victorville. They are no longer flying any A320s. They do still have a handful of A321neos that they are regrettably getting rid of by the end of this year, hopefully not too soon, because I should be on one later this month, or next month, I think. Also, the Dash 8Q 400s, like we mentioned. There are only a handful left in the fleet and they should

be gone in a couple of weeks. If you are an Alaska passenger, or were formerly a Virgin America passenger, basically, all signs of that airline ever having existed will be gone shortly. Sorry.

**[0:59:02] IP:** There it is.

**[0:59:04] JR:** I'm sad.

**[0:59:05] IP:** I'm bummed out. But what are you going to do?

**[0:59:08] JR:** Talk about some DC-10s.

**[0:59:09] IP:** There you go. Also leaving fleets worldwide is the DC-10. FedEx up until –

**[0:59:16] JR:** More precisely, aren't the MD-10s?

**[0:59:18] IP:** Okay. Well, I'm getting there.

**[0:59:20] JR:** Let's get pedantic about it. They're MD-10s.

**[0:59:22] IP:** All right. FedEx, up until a couple of weeks ago had been the world's largest operator of the DC-10 airframe.

**[0:59:30] JR:** Okay. Fine.

**[0:59:33] IP:** FedEx had upconverted their DC-10s to MD-10s. MD-10s are basically, DC-10 airframes that have had the avionics changed out, so that they have type commonality with the MD-11, so a pilot can fly both and not have to worry about changing between the two aircrafts and having more than one type certification, etc., etc. The important thing is, is that the DC-10 is really, really on its last legs here. Outside of government flying, basically the KC-10 for the United States Air Force. There are just a handful still flying. They just pop up here and there, because they're used so infrequently. I think at this point, the easiest to find DC-10 is going to have to be the tab cargo flying in and out of Miami.

**[1:00:24] JR:** Oh, yeah. I've seen that one, too. It's a good-looking aircraft.

**[1:00:26] IP:** Yeah. Not many DC-10s left flying around after FedEx's retirement. Then finally, an interesting thing happened yesterday. There's a 100 and some odd 1,000 flights every day, a 150, 60, 70, 80, depending on time of the year –

**[1:00:42] JR:** But who's counting?

**[1:00:43] IP:** -and all that fuss. Yeah, if only there was a website to count those things. The moral of the story is that there are dozens of diversions every day, for reasons as exciting as a baby being born on the aircraft, to a light bulb went out, and so we have to go back and make sure, because it's a really important light bulb and everything in between. Delta flight 221 yesterday was making its way out of Europe and back over to the US. It was flying –

**[1:01:13] JR:** Paris to Salt Lake City.

**[1:01:15] IP:** Yeah, Paris to Salt Lake City.

**[1:01:16] JR:** It was just northwest of Ireland.

**[1:01:19] IP:** That's what I was trying to say.

**[1:01:20] JR:** I got you. That's why I'm your co-host. It signaled that they started diverting back towards Europe, but not towards where you would expect. Not towards Paris, not towards Dublin, not towards London, or anywhere that you would think a flight would divert to, but they filed to fly all the way down to Madrid. That's five hours away from where they were. It was a very curious head scratcher. I don't recall seeing a diversion of that nature for usually, when you see something like that, that over northern Canada and have to go all the way back down to Seattle, or something, right?

**[1:01:54] IP:** Which coincidentally happened earlier in the week. There was a flight that was over northern Canada, and basically was due north of Seattle and then ended up diverting there. This particular flight is interesting, because the ability of people who know about things to

post that knowledge on Twitter, in near real-time is just a very valuable thing that we've discussed multiple times. In this particular instance, there was someone who was reading the ACARs messages from the aircraft. The ACARs messages said that one of the engines had an anti-ice issue.

I pulled up the icing forecast map. As it turns out, there was icing forecast for Paris, for London, for Dublin, for Shannon, for all of these other airports that were much closer to where the aircraft needed to start diverting. As it turns out, Madrid was the closest and best suitable airport that where the aircraft would not have to deal with icing on approach. These things all make sense. We've talked about this before is there's always a reason. The reason is always a good one.

**[1:03:04] JR:** Yea. Which is exactly what I tweeted. the only thing I can think of is that maybe this part exists in Madrid. It doesn't exist elsewhere. I don't know. Then Twitter did its thing as – and always does. Then one person used a source that I didn't even know existed. I think you knew it existed, that you can pull ACARs information pretty much anywhere, just like ADSB? It's crowd sourced on the Internet and you can search it. From there, I said, “Okay, why would anti-ice matter?” People said, “Oh, well, you can't fly through icing conditions, if you're anti-ice doesn't work.” The nearest place that Delta operates to that doesn't have icing conditions, or icing conditions, inner route is the most important part of that was Madrid. Delta ended up confirming that and saying that the aircraft landed without incident before it actually landed and all.

**[1:03:54] IP:** Yeah, they were not close gliding.

**[1:03:56] JR:** They were really, really positive that aircraft was going land with that incident, but it was just really one of those great Internet detective moments, putting together all those things and saying, “Huh, that makes sense, doesn't it?” Turns out, these people do know what they're doing.

**[1:04:09] IP:** Surprise, surprise. On that note, we're going to leave that to the folks who know what they're doing and call this a wonderful episode 198. Thank you, everyone, so much for listening. We really hope you enjoyed the conversation with Casey and Chris. I know that Jason and I were just left dumbfounded at how much work goes into that and each and every day. As

we learn more about the FAA's ground stop and NOTAM outage issues, I'm sure we'll have more to say on that next week. For now, thank you so much for listening. This has been episode 198. I am Ian Petchenik, here, as always with –

**[1:04:46] JR:** Jess Rabinowitz. Thanks for listening.

[END]